FIKS, A.F.

Some features of the occurrence of metastases of cancer of the stomach. Sov.med. 24 Mr '60. (MIRA 14:3)

1.Iz kafedry patologicheskiy anatomii (zav. - prof. Ye.A.Uspenskiy) Odesskogo meditsinskogo instituta imeni N.I.Pirogova (dir. - prof. I.Ya. Deynyka).

(STOMACH—CANCER)

GRIGOROVICH, N.A.; FIKS, A.F.

Functional state of the adrenal cortex in experimental hemolytic anemia produced by phenyldrazine. Biul. eksp. biol. i med. 49 no. 5:54-57 My '60. (MIRA 13:12)

1. Iz kafedry patologicheskoy fiziologii (zav. - prof. N.N. Zayko) Odesskogo meditsinskogo instituta imeni N.I. Pirogova (dir. - zasluzhennyy deyatel' nauki prof. I.Ya. Deyneka). Predstavlena deystvitel'nym chlenom AMN SSSR V.N. Chernigovskim.
(ADRENAL CORTEX) (ANEMIA) (HYDRAZINE)

FIKS, A.F.

Diagnosis of a foliaceous tumor in the breast. Zdrav. Turk. 7 no.6:19-23 Je'63. (MIRA 16:8)

1. Iz patomorfologicheskoy laboratorii Odesskogo oblastnogo onkologicheskogo dispansera (glavnyy vrach N.A.Novikova, nauchnyy rukovoditel' raboty - dotsent K.S.Viner).

(BREAST--TUMORS)

FIKS, A.F.

Characteristics of phyllode tumors of the breast ("phyllode cystosarcoma" of earlier authors). Trudy Inst. eksp. morf. AN Gruz. SSR 11:257-262 '63. (MIRA 17:11)

1. Morfologicheskaya laboratoriya Odesskogo oblastnogo onkologicheskogo dispansera.

FIKS, A.F. (Odessa, A-14, ul. Kirova, 2, kv.14)

Phyllode tumor of the breast and its relation to fibroadenoma and sarcoma. Vop. onk. 10 no.12:21-26 '64. (MIRA 18:6)

1. Iz Odesskogo oblastnogo onkologicheskogo dispansera (glavnyy vrach - N.A. Novikova) i patologoanatomicheskogo otdeleniya Odesskogo okruzhnogo voyennogo gospitalya.

FIKS, I.F.

Foliaceous tumors of the breast. Sov. med. 27 no.1:76-81 Ja '64. (MIRA 17:12)

FIKS, A.F., (Odessa)

Burn and sarcoma of the mammary gland. Khirurgiia 40 no.7: 135-136 Jl '64. (MIRA 18:2)

1. Iz patomorfologicheskoy laboratorii Odesskogo oblastnogo onkologicheskogo dispansera (glavnyy vrach - N.A. Novikova).

FIKS, A.F. (Odessa)

Robert Meyer, 1864-1947; on the centennial of his birth. Arkh.pat. 27 no.7:82-84 '65. (MIRA 18:8)

1. Laboratoriya patomorfologii Odesskogo oblastnogo onkologicheskogo dispansera (glavnyy vrach N.A.Novikova).

PENENKOV, B.L.; FIKS, A.F.

Diagnosis of echinococcosis of the abdominal cavity. Klin. khir. no.2:66-69 '65. (MIRA 18:10)

1. Patologoanatomicheskoye otdeleniye (zav.- N.B. Zelenova) 1-y Odesskoy gorodskoy klinicheskoy bol'nitsy.

FIKS, I.G., inzh.

Choice of winding parameters for establishment of a homogeneous magnetic field. Elektrichestvo no.5:43-49 My '62. (MIRA 15:5)

1. Donetskiy nauchno-issledovatel'skiy ugol'nyy institut.
(Magnetic field) (Electric coils)

FIKS, I.G. [Fiks, I.H.] (Donetsk)

Electromagnetic consumption meter containing a transducer with a nonuniform magnetic field. Avtomatyka 8 no.6:29-41 '63.
(MIRA 17:8)

FIKS, I.G., inzh.

Indicator of magnetite concentration in heavy suspensions.
Ugol' Ukr. 4 no.5:36-37 My '60. (MIRA 13:8)
(Coal preparation--Equipment and supplies)

ZVENIGORODSKIY, E.G., inzh.; FIKS, I.G., inzh.

Electric measurement of the parameters of coal suspensions. Ugol' 37 no.9:42-43 S '62. (MIRA 15:9)
(Hydraulic mining) (Coal—Electric properties)

FIKS, I.G.; ZVENIGORODSKIY, E.G.

Studying the electric conductivity of coal suspensions. Sbor.-DonUGI no.22:112-120 '61. (MIRA 15:6)
(Electric conductivity) (Hydraulic mining)

FIKS, I.G., inzh.

Magnetic field of sector-shaped coil with a constant [illegible] thickness. Sbor. DonUGI no.31:98-125 '63.

Effect of irregularities of the magnetic field of a transducer on the accuracy of an electromagnetic flowmeter. Ibid.:130-143
(MIRA 17:10)

FIKS, I.G., inzh.; CHUBERKIS, V.P., inzh.

Regulating relay of the flow of coal pulp. Sbor. DonUGI no.31:144-148 '63. (MIRA 17:10)

IL'IN, N.; YEL'FIMOVA, Ye.; FIKS, L.

Simplify the financing of planning and surveying work. Fin. SSSR 22 no.1:73-76 Ja '61. (MIRA 14:1)

1. Nachal'nik otdela L'vovskogo otdeleniya Teploelektroproyekt (for Il'in). 2. Nachal'nik otdela L'vovskoy oblastnoy kontory Stroybanka (for Yel'fimova). 3. Starshiy inzhener-ekonomist Giprobuma (for Fiks).

(Architecture—Designs and plans)
(Lvov Province—Electric power stations—Finance)

KALMANOVSKIY, V.I.; KISELEV, A.V.; LEBEDEV, V.P.; SAVINOV, I.M.; SMIRNOV, N.Ya.; FIKS, M.M.; SHCHERBAKOVA, K.D.

Gas chromatography in glass capillary columns with a chemically modified surface. Zhur.fiz.khim. 35 no.6:1386-1388 Je '61. (MIRA 14:7)

1. Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova i Dzerzhinskiy filial opytno-konstruktorskogo byuro avtomatiki Goskhimkomiteta.

(Gas chromatography)

ZHDANOV, S.P.; KALMANOVSKIY, V.I.; KISELEV, A.V.; FIKS, M.M.; YASHIN, Ya.I.

Use of porous glasses as adsorbents in gas chromatography.
Zhur.fiz.khim. 36 no.5:1118-1120 My '62. (MIRA 15:8)

1. Institut khimii silikatov AN SSSR; Opytno-konstruktorskoye byuro avtomatiki Gosudarstvennogo komiteta khimicheskoy promyshlennosti pri Sovete Ministrov SSSR, Dzerzhinskiy filial i Moskovskiy gosudarstvennyy universitet imeni Lomonosova, khimicheskiy fakul'tet.
(Glass) (Adsorbents) (Gas chromatography)

BUROV, A.N.; KALMANOVSKIY, V.I.; FIKS, M.M.; YANSHIN, Ya.I.

Ionization methods for determining microimpurities in gases. Trudy Kom.anal.khim. 13:247-256 '63. (MIRA 16:5)
(Ionization of gases) (Gas chromatography)

L 20985-66 EWT(1)/EWT(m)/T AT

ACCESSION NR: AP5020260 UR/0367/65/002/001/0112/0116

35
35
B

AUTHORS: Vyalov, G. N.; Fiks, M. M.

TITLE: On the acceleration of particles with a variable charge in electrostatic field

SOURCE: Yadernaya fizika, v. 2, no. 1, 1965, 112-116

TOPIC TAGS: electrostatic field, electrostatic acceleration, ion beam, beam velocity

21

ABSTRACT: The possibility of high-current acceleration of heavy ions by changing the ion charge was investigated analytically. The nonpotential characteristic of the product ZE under the integral of the energy equation is shown by

$$\Delta W = W_2 - W_1 = e\int_{r_1}^{r_2} Z(\mathbf{E}\,d\mathbf{r}).$$

The optimum potential required to impart the maximum energy to the accelerating ion beam with given energy W is calculated and is given by

$$V_0 = [Z_1(W) - Z_c(W)] / 2eZ_1(W)Z_c'(W).$$

The various mechanisms for causing intensity losses in the multiple acceleration

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ACCESSION NR: AP5020260

3

scheme described above are listed. For a constant ΔW the mean multiple scattering angle at small angles is given by $\overline{\theta_m^2} = \mathrm{const} / \Delta W \cdot W_0$.

The scattering cross section for the large angle aperture accelerator is given by

$$\sigma(\theta_L) = \frac{\pi e^4 Z_0^2 Z_1^2}{W^2} \frac{\cos\theta_L}{\sin^2\theta_L}\left[1 - \frac{A_0^2}{A_1^2}\sin^2\theta_L\right]^{1/2},$$

and the beam intensity by

$$\frac{I}{I_0} = \left[\sqrt{\frac{\pi}{2}} \int_0^{L/\langle r^2\rangle^{1/2}} \exp\left(-\frac{t^2}{2}\right) dt\right]^2 \cdot P(\theta_L).$$

It is shown that for all elements high intensity ion beams can be obtained with the limiting energy $W_K = 0.125 A_0 Z_0^{4/3}$ Mev. "The authors express their gratitude to corresponding member of the AN SSSR, G. N. Flerov, for his continuous interest in the work and to Professor M. I. Podgoretskiy for his valuable advice and evaluation of the problem." Orig. art. has: 13 formulas. [04]

ASSOCIATION: Ob'yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research)

SUBMITTED: 17Jan65 ENCL: 00 SUB CODE: NP

NO REF SOV: 002 OTHER: 003 ATD PRESS 4075

Card 2/2 BK

ACC NR: AP7001192 (A) SOURCE CODE: UR/0407/65/000/05-/0023/0026

AUTHOR: Fursov, S. P. (Kishinev); Lyubchik, M. Ya. (Kishinev); Fiks, M. S. (Kishinev)

ORG: none

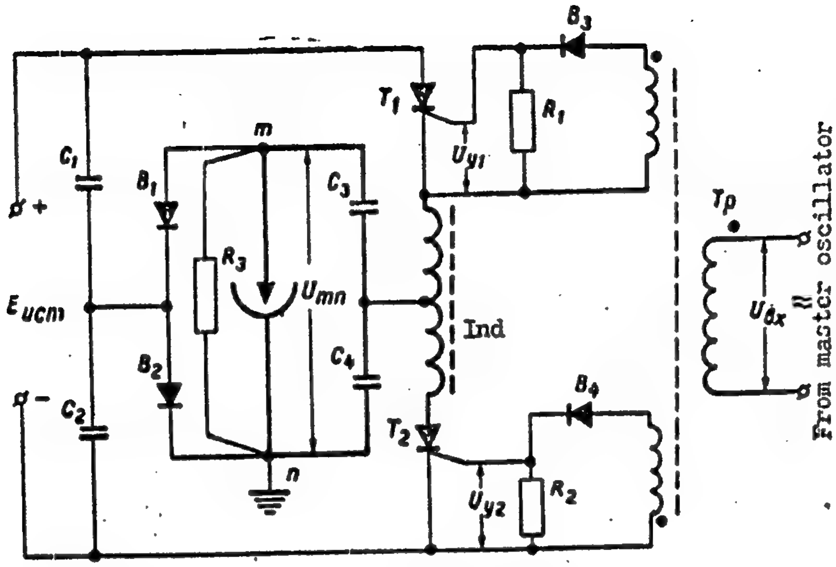
TITLE: Thyristorized power source for electrospark-machining purposes

SOURCE: Elektronnaya obrabotka materialov, no. 5-6, 1965, 23-26

TOPIC TAGS: electric power source, power supply, electrospark machining, thyristor

ABSTRACT: Connected with some modern European electrospark-machining developments (Draht, 1963, 14, 12, 797-802), a simple pulse generator is suggested, in which the discharge pulses bypass semiconductor devices (see the discharge circuit in heavy lines in the figure). The generator is actually a series-type inverter formed by capacitors C_1 C_2, inductor Ind, and thyristors T_1 T_2. The inverter is loaded with a bridge circuit consisting of storage capacitors C_3 C_4 and diodes B_1 B_2. The work sparkgap shunted by a kohm-range resistor R_3 is connected diagonally to the bridge. The generator converts d-c energy into homopolar pulses whose rate is equal to the double frequency of the master oscillator used for driving. An experimental hookup was tested at a rate of 800 pulses per sec with a d-c voltage of 150 v and a load resistance of 350 ohms. Principal characteristics (V-I, no-load voltage vs. rate, short-circuit current vs. rate) are shown; highest attainable pulse rate, 2000. Orig. art. has: 6 figures and 1 formula.

ACC NR: AP7001192



SUB CODE: 13, 09 / SUBM DATE: none / ORIG REF: 007 / OTH REF: 001

Card 2/2

FIKS, V.B.

USSR

A resonance magnetic mass spectrometer with a high resolving power. N. I. Ionov, B. A. Mamyrin, and V. B. Fiks. Zhur. Tekh. Fiz. 23, 2104-6(1953).—A resonance magnetic mass spectrometer is described which has an increased current intensity and whose resolving power can be changed without discontinuity. J. Rovtar Leach

62

2

[illegible]ks, V. B.

FIKS, V.B.

AUTHORS: Kaimakov, Ye.A., and Fiks, V.B. 120-6-24/36

TITLE: A Method of Measuring Transport Numbers by a Simultaneous Observation of the Motion of the Ions and the Solution (Metod izmereniya chisel perenosa po sovmestnomu nablyudeniyu dvizheniya ionov i rastvora)

PERIODICAL: Pribory i Tekhnika Eksperimenta, 1957, No.6, pp. 95 - 97 (USSR).

ABSTRACT: A simple method of measuring transport numbers is described. The method consists in the observation of levels of solutions in a U-tube in which the anode and the cathode sections are separated by a special filter. The method is a modification of the classical experiments of Lodge (Ref.1) and Whetham (Ref.2). Results of measurements on water solutions of NH_4Cl and NaCl are summarised in Figs. 3-5. There are 5 diagrams and 5 non-Slavic references.

ASSOCIATION: Physico-technical Institute of the Ac.Sc. USSR. (Fiziko-tekhnicheskiy Institut AN SSSR)

SUBMITTED: April 17, 1957.

AVAILABLE: Library of Congress

Card 1/1

Fiks, V B

AUTHOR: FIKS, V.B. 57-6-20/36

TITLE: On the Effect of Convection on Diffusion. (O vliyanii konvektsii na diffuziyu, Russian)

PERIODICAL: Zhurnal Tekhn.Fiz. 1957, Vol 27, Nr 6, pp 1282-1288 (U.S.S.R.)

ABSTRACT: The diffusion in a liquid which moves in a tube (column) with a velocity v and has a cross section S in the longitudinal direction, is investigated.

The motion is assumed to be steady ($\frac{dv}{dt} = 0$) and the liquid as incompressible ($\operatorname{div} \vec{v} = 0$).

It is shown that the influence of convection flows in a liquid upon the shifting of the dissolved substance on certain conditions becomes a mixing of diffusion along the flow axis. The change of the concentration of the dissolved substance is expressed by a differential equation of convection diffusion, where the coefficient of the convection diffusion has the usual physical significance.

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57-6-20/36

On the Effect of Convection on Diffusion.

The limits, within which the equation of convection diffusion is valid, are given. (With 1 Illustration).

ASSOCIATION: FTI, Leningrad
PRESENTED BY:
SUBMITTED: 30.12.1956
AVAILABLE: Library of Congress

Card 2/2

FIKS, V.B.

Mechanism of ion mobility in metals. Fiz.tver.tela 1 no.1:16-30 Ja '59. (MIRA 12:4)
(Ions) (Metals)

~~24(6)~~ 24,7700

66252

SOV/181-1-7-8/21

AUTHORS: Pikus, G. Ye, Fiks, V. B.

TITLE: Electrokinetic Effects in Liquid Metals. I

PERIODICAL: Fizika tverdogo tela, 1959, Vol 1, Nr 7, pp 1062-1071 (USSR)

ABSTRACT: Liquid metal is assumed to be contained in a thin capillary tube. On the passage of current the wall or an immobile boundary layer receive a pulse in the direction of the electron current as a result of nonelastic electron scattering at the boundary. The inert mass of the liquid is given the same pulse in the opposite direction. In an open capillary tube this effect causes the liquid to flow, whereas an electroosmotic pressure, P, is produced in a closed tube. This results in the generation of convection currents - in the current direction on the walls, in the opposite direction in the center of the capillary tube - which causes the liquid particles to mix. The process is defined by substituting the so-called coefficient of convection diffusion, D_k. On the basis of the active forces, the equation for the steady flow of a viscous liquid, and the current distribution j(z) over the capillary tube cross section, Q is obtained as "transport current", that is the quantity of liquid passing through the capillary tube cross section

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per unit of time and length, for the open, round capillary tube:

$Q\Big|_{\Delta P=0} = 0.1s(1-\varepsilon)\frac{en\,E\,\ell^2}{\eta}$. η denotes viscosity, ℓ free path of the electron on the Fermi surface, ε the reflection coefficient, and n the electron density. The electroosmotic pressure is obtained from $\nabla P = 0.8(1-\varepsilon)\ enE\left(\frac{\ell}{a}\right)^2$, where a is the radius of the capillary tube.

$D_k = \frac{10^{-4}}{5.124\,D}\left(\frac{\nabla P\,d^3}{\eta}\right)^2$ results as diffusion coefficient for a plane capillary tube, $\frac{10^{-4}}{0.3072\,D}\left(\frac{\nabla P\,a^3}{\eta}\right)^2$ for a cylindrical capillary tube, where D denotes the ordinary diffusion coefficient. The phenomenon plays an important part in the separation of alloy components or isotopes. The above formulas hold for free electrons.

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If they ought to hold for bound electrons,

$$N_{eff} = -\frac{m}{4\pi^3 \hbar^2} \int \left(\frac{\partial \mathcal{E}}{\partial k_x}\right)^2 \frac{\partial f_o}{\partial \mathcal{E}} \, d\tau_k$$ is to be substituted for n.

f_o denotes the Fermi function, $\mathcal{E}$ the electron energy. The following relations result for the "transport flow and potential" when using the principle of symmetry of Onsager's kinetic coefficients:

$$\bar{j}\Big|_{\nabla V=0} = -0.1(1-\varepsilon)\frac{e\ell^2 N_{eff}}{\eta}\nabla P \quad , \quad \Delta V\Big|_{j=0} = -0.1(1-\varepsilon)\frac{eN_{eff}\ell^2}{\sigma\eta}\Delta P \, .$$

A table shows the ratio of the electroosmotic pressure ΔP to $(1-\varepsilon)\,\Delta V$, of ΔV to $(1-\varepsilon)\,\Delta P$, and the ratio of the convection diffusion coefficient D_k to $(1-\varepsilon)^2 E^2$ for sodium, potassium, lithium, and mercury. ΔV denotes the potential-difference at the

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ends of the capillary tube, ΔP the pressure difference, E the field strength in the liquid. These values hold only for laminar flows. Theory and the values hold only if ℓ greatly exceeds the interatomic distance. All these data are also applicable to semiconductors. An exact solution for a cylindrical capillary tube is given in an appendix. There are 1 table and 10 references, 4 of which are Soviet.

ASSOCIATION: Institut poluprovodnikov AN SSSR, Leningrad (Institute of Semiconductors, AS USSR, Leningrad)

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SUBMITTED: May 5, 1958

~~24 (6)~~ 24,2110

66264

SOV/181-1-7-20/21

AUTHORS: Fiks, V. B., Pikus, G. Ye

TITLE: Electrokinetic Effects and Electronic Viscosity in Liquid Metals.II

PERIODICAL: Fizika tverdogo tela, 1959, Vol 1, Nr 7, pp 1147 - 1158 (USSR)

ABSTRACT: When liquid metal contained in a thin capillary tube is caused to flow through it, "transport current" is produced on the wall as a result of nonelastic electron scattering. It is shown here that the "transport current", which is produced in the volume by nonuniform velocity distribution over the capillary tube cross section, leads to what is called electronic viscosity of the liquid metal. An additional expression for the "transport current" density is obtained by solving the kinetic equation. "Transport current I" itself is then defined by the relation $I \simeq -0.1(1-\mathcal{E})enl^2d\frac{\nabla P}{\eta}$. When the "transport current" is assumed to consist of two parts, i.e. the current in the volume and the surface current, it holds: $I = -0.1s(1-\mathcal{E})enl^2d\frac{\nabla P}{\eta}$. The "transport potential" at the ends of the open conductor is given by

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SOV/181-1-7-20/21

Electrokinetic Effects and Electronic Viscosity in Liquid Metals.II

the relation $\Delta V|_{I=0} = -0.1(1-\varepsilon)\frac{enl^2}{\sigma\eta}\Delta P$ (for denotation see Paper 1). These formulas apply to free electrons. For bound electrons, n is to be transformed into $N_{eff} = -\frac{m}{4\pi\hbar^2}\int\left(\frac{\partial\mathcal{E}}{\partial k_x}\right)^2\frac{\partial f_0}{\partial\mathcal{E}}\,d\vec{\tau}_k$, where $\mathcal{E}$ denotes the electron energy, $\vec{k}$ its quasi-momentum. By transforming wave vector $\vec{k}$ in the transition from the moving to the immobile coordinate system it is shown that the transformation of n into N_{eff} is correct. The "transport current" influences the flow of the liquid, which is termed secondary electrokinetic effect. The velocity distribution along the cross section does not change, while the viscosity of the liquid changes. $\eta_e = \frac{1}{5}\frac{enl^2}{\mu}$ is the contribution made by electrons to the viscosity. This is called electronic viscosity. It is shown by R. Cambers' method that the formula set up for the volume current holds also for the general case and, accordingly, also the expression for electronic viscosity. Its special measurement is difficult; according to the table,

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Electrokinetic Effects and Electronic Viscosity in Liquid Metals.II

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its contribution to the total viscosity amounts to 10-20%. Separation of the contribution of electronic viscosity may be possible by measuring the variation of viscosity in the magnetic field. Contrary to the "volume transport current", the surface current disturbs the velocity distribution, i.e. according to Poiseuille's law. The secondary electrokinetic effects can be described by electronic viscosity only if the forces acting upon the liquid vary but little over a distance of the order of l. An appendix presents the exact solution for a cylindrical capillary tube. There are 1 figure, 1 table, and 4 references, 1 of which is Soviet.

ASSOCIATION: Institut Poluprovodnikov AN SSSR, Leningrad (Institute of Semiconductors, AS USSR, Leningrad)

SUBMITTED: May 5, 1958

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Card 3/3

~~9(3)~~ 24.7700

SOV/181-1-8-32/32

AUTHOR: Fiks, V.B.

TITLE: Entrainment of Ions by Electrons in Semiconductors

PERIODICAL: Fizika tverdogo tela, 1959, Vol 1, Nr 8, pp 1321-1323 (USSR)

ABSTRACT: The author analyzed the entraining effects in semiconductors by means of the expression mentioned in reference 1. This expression had been derived in the free electron approximation for the force exerted by electrons. The experimentally observable ion mobilities are the actual mobilities (u_{eff}) which are related with the true mobility by the relation $u_{eff} = u_0(1 - nl\overline{\sigma}_i)$. Here, n denotes the concentration, l the free path of electrons in the semiconductor, and $\overline{\sigma}_i$ the mean scattering cross section. The entraining effects become essential if the product $nl\overline{\sigma}$ is of the order of unity. With $nl\overline{\sigma}_i > 1$, the actual mobility of the positive ions changes its sign. In this case the force exerted by the electrons on the ions is larger than the force of the outer field. The author then estimates the concentration of electrons in which the entraining effects in the semiconductors acquire an essential

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silicon as observed by Boltaks and others is perhaps related to the entrainment of ions by electrons. In negative ions the entrainment by electrons superposes with the motion in an electric field and increases the actual mobility. The actual mobility of neutral atoms in semiconductors is entirely dependent on the entrainment of such atoms by electrons, and the negative atoms travel like negatively-charged ions. The investigation of entraining effects on the basis of the actual neutron and neutron atom mobility may offer an expedient method for the investigation of the mechanism of electron scattering at impurity centers. The present report does not deal with the entraining effects caused by the holes. They were not taken into account in the estimation of the inversion temperature either. The author thanks M.I. Klinger, G.Ye. Pikus and L.S. Stil'bans for their discussion. There are 2 Soviet references.

ASSOCIATION: Institut poluprovodnikov AN SSSR, Leningrad (Institute of Semiconductors of the AS USSR, Leningrad)

4

SUBMITTED: May 4, 1959

24.2110

S/181/60/002/01/15/035
B008/B011

AUTHORS: Fiks, V. B., Pikus, G. Ye.

TITLE: Electrokinetic Effects 21 in Liquid Semiconductors 21

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 1, pp. 65 - 66

TEXT: The authors investigated the phenomena brought about by the formation of a volume charge layer on the semiconductor surface. They resemble the electrokinetic phenomena to be seen in electrolytes and can be determined in a similar manner. Since, however, the conductivity of a semiconductor is considerably lower, appreciably stronger fields can be generated therein, and the phenomena themselves can be stronger as compared with metals. The measurement of electrokinetic phenomena allows a direct determination of the potential difference φ_0 between the surface of the semiconductor and the volume. If the capillary walls are metalized from within, and there are no additional charges on the semiconductor surface, φ_0 then equates the potential difference of the contact between metal and semiconductor. If the capillary walls are dielectric, φ_0 is only determined by the charge on the surface levels.

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If the capillary is metalized from outside, the charge can be changed in the layer near the interface by the generation of a transverse electric field between metal and semiconductor. Much like in experiments with the field effect (Ref. 2), the charge on the surface traps and the volume charge produced by the carriers can be determined by measuring the dependence of φ_0 on the induced charge. There are 2 Soviet references.

ASSOCIATION: Institut poluprovodnikov AN SSSR, Leningrad (Institute of Semiconductors, AS USSR, Leningrad)

SUBMITTED: May 14, 1959

FIKS, V.B.

81967
S/181/60/002/04/29/034
B002/B063

5.5800

AUTHORS: Fiks, V. B., Pikus, G. Ye.

TITLE: Analysis of Microimpurities by Means of a Magnetic Resonance Mass Spectrometer

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 4, pp. 716-727

TEXT: When high-purity materials are subjected to a mass-spectrometric analysis, their sensitivity is considerably reduced by the background formed by molecules and atoms of the residual gas. This drawback could be largely avoided by two or three spectrometers connected in series. However, such a setup is very complicated. In the paper under review, the authors suggest a so-called resonance mass spectrometer which is based on the principle of a synchrocyclotron. The particles are electrically accelerated and then forced to enter almost circular paths by means of a magnetic field. With the aid of electric pulses, the particles are accelerated in packets. The rest comes out of phase (Figs. 1 and 2). The authors calculated the resolution of the instrument and the sensitivity in the analysis of microimpurities. The measurable minimum concentration is, theoretically, about

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10^{-9}. This requires the highest number of pulses possible, i.e., the highest number of ion packets possible per unit of time; a low resolution; and a small number of revolutions in the magnetic field. There are 3 figures and 10 references: 6 Soviet and 4 British.

ASSOCIATION: Institut poluprovodnikov AN SSSR, Leningrad (Institute of Semiconductors of the AS USSR, Leningrad)

SUBMITTED: July 22, 1959

9.4300 (1143,1155)

S/181/60/002/012/018/018
B006/B063

AUTHORS: Pikus, G. Ye. and Fiks, V. B.

TITLE: Microimpurity Analysis by Means of a Magnetic Resonance Mass Spectrometer. II. Calculation of the Background Current

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 12, pp. 3120-3128

TEXT: The accuracy of mass-spectrometric microimpurity analysis is limited chiefly by the background current which is due to ions of the main beam components inciding upon the receiver after scattering in the residual gas. The most effective method of eliminating the scattered-ion background is to use several spectrometers in stage operation. Part I of the present paper has shown that a magnetic resonance mass spectrometer can be used as a multistage separator, in which each revolution of the ions constitutes a stage of the separating cascade. The present paper presents a calculation of the background current in such a device which is schematically represented in Fig. 1; q is the source of the ion beam which is bent in the magnetic field and hits a three-grid modulator m. A positive retarding voltage V_3, which is higher than the accelerating

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voltage (V_q) in the source, is applied to the central grid of the modulator. Accelerating pulses (amplitude: V_m; interval: T_m; duration: τ) reach grid C of the modulator. As $V_m > (V_3 - V_q)$, an accelerating field is produced in the modulator after some time, in which the energy of the penetrating ions is increased by ΔE_i. The period of revolution T_i is given as $T_i = kT_m, k = 1,2,3...$ Denoting the ion mass by M_i gives $T_i = 652 \cdot 10^{-6}(M_i/H)$ sec. The total current hitting the collector is proportional to k. A retarding field reflecting the scattered ions is produced in front of the collector. The two accelerating fields (in the modulator and in front of the collector) eliminate those components of the background current which are due to scattering of non-resonance ions by the collector and to multiple revolution of non-resonance ions. The authors have studied that background current which is due to ion-beam shuttering. This effect cannot be eliminated by retarding fields. The portion of ions scattered by the residual gas is called the shuttering coefficient w; the background current is given by $I_0 w$, where

Microimpurity Analysis by Means of a Magnetic Resonance Mass Spectrometer. II. Calculation of the Background Current

S/181/60/002/012/018/018
B006/B063

I_0 is the current of the main component. The authors consider only the case where beams of ions of similar masses overlap, since ions with largely differing masses usually do not reach the slit of the modulator. For ions reaching the slit of width L, the conditions $\Delta M/M \lessapprox L/R$ must be satisfied, where ΔM is the difference in mass of resonance and scattered ions. For this case, the authors investigate the effect of operation parameters and derive explicit formulas for w. These expressions are then applied to some special cases: 1) scattering by induced dipoles; 2) scattering by molecules with rigid dipoles. In the first case one obtains $w \approx 4.10^{-6}$ for ions with $\Delta M/M \simeq 10^{-2}$ and $w \approx 3.10^{-4}$ for ions with $\Delta M/M \simeq 10^{-3}$. In the second case one finds $w = 1.4 \cdot 10^{-6}$ ($\Delta M/M = 10^{-2}$) and $w = 5.10^{-4}$ ($\Delta M/M = 2.10^{-3}$). Since the total shuttering coefficient in a resonance mass spectrometer after N revolutions equals w^N, it is sufficient to choose N = 3 - 4 for eliminating the background due to scattering. There are 4 figures and 4 references: 3 Soviet and 1 US.

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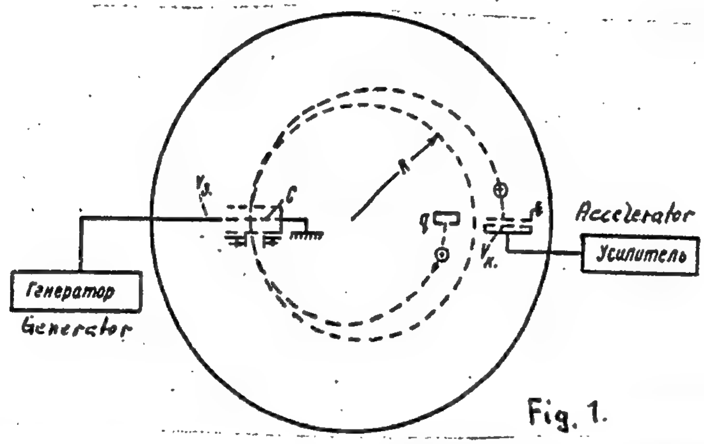
Microimpurity Analysis by Means of a Magnetic Resonance Mass Spectrometer. II. Calculation of the Background Current

S/181/60/002/012/018/018
B006/B063

ASSOCIATION: Institut poluprovodnikov AN SSSR Leningrad (Institute of Semiconductors AS USSR, Leningrad)

SUBMITTED: May 16, 1960



Card 4/4

Fig. 1.

FIKS, V.B.

Mechanism of thermal diffusion in fluids. Fiz. tver. tela 3 no.3:994-997 Mr '61.
(MIRA 14:5)

(Thermodynamics) (Diffusion)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413020005-6"

Fiks, V. B.

28101

24,7700 (1160, 1482, 1164)

S/181/61/003/009/035/039
B108/B138

AUTHOR:

TITLE: Effect of a magnetic field on ion migration in liquid metals

PERIODICAL: Fizika tverdogo tela, v. 3, no. 9, 1961, 2868-2870

TEXT: It has not been possible so far to calculate the electron-ion scattering cross section with sufficient accuracy, to determine the charge of impurity ions. Migration experiments in liquid metals are suitable for this purpose, since the ion mobility and consequently, Hall effect, are not too small to be observed. The force acting upon an impurity ion in an equilibrium liquid metal under the effects of electric field in the x-direction and magnetic field in the z-direction is $F_i = -\nabla p v_i + z_i E_{Hall} + F_{ei}^{(y)}$. In this equation, v_i denotes the ion volume, z_i - its charge, $F_{ei}^{(y)}$ - the force due to electron-ion scattering and causing ion transport by the electrons (V. B. Fiks. FTT, I, 1, 16, 1959). This force is proportional to the current flowing in the y-direction. In first approximation the

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electron gas is totally degenerate and $F_{ei}^{(y)} = 0$. The pressure gradient is $\nabla p = \frac{1}{c}[j, H]$, the internal Hall field $E_{Hall} = -\frac{1}{c}[v\ H]$, and the current density $j = env$. v denotes the velocity of electrons with Fermi energy. With these substitutions, the force F_i is given by the following expression: $F_i = E_{Hall}(z_i - env_i)$, v_i is the volume of an impurity ion. This force leads to a change in impurity-ion concentration in the y-direction, and to an ion current in this direction. The relative change in concentration is $\frac{\Delta c}{c} = F_i \frac{l}{kT}$, where l denotes the y-dimension of the sample. The change in ion concentration is estimated for an experiment in which $E_{Hall} = 10^{-9}\cdot RjH$. For alkali metals $R = 2\cdot 10^{-3}$ cm^3/coulomb; then if $j = 10^4$ a/cm^2 and $H = 4\cdot 10^4$ oersted, the relative change in ion concentration for a sample of $l = 3$ cm will be about 10% at $T = 300°K$. The ion charge may then be determined from the expression $(z_i - env_i)$ when the ion volume in the metal solvent is

28101

Effect of a magnetic field on ion ... S/181/61/003/009/035/039
B108/B138

known. The only thing one has to do is to measure the ion concentration in the y-direction. In semiconductors, where the Hall field is stronger than in metals, migration and ion transport by electrons is more effective and may therefore not always be neglected. There are 4 Soviet references.

ASSOCIATION: Institut poluprovodnikov AN SSSR Leningrad (Semiconductor Institute of the AS USSR Leningrad)

SUBMITTED: May 9, 1961

Card 3/3

KAYMAKOV, Ye.A.; FIKS, V.B.

Measurement of the transfer munbers of H+ ions in hydrochloric acid solutions by a concurrent observation of the motion of ions and of the solution. Zhur.fiz.khim. 35 no.8:1777-1783 Ag '61. (MIRA 14:8)

1. Leningradskiy fiziko-tekhnicheskiy institut.
(Ions—Migration and velocity)
(Electrolyte solutions)
(Hydrochloric acid)

FIKS, V.B.

Effect of a magnetic field on the ionic conductivity of semiconductors. Fiz.tver.tela 4 no.7:1863-1873 Jl '62. (MIRA 16:6)

1. Institut poluprovodnikov AN SSSR, Leningrad.
(Semiconductors—Electric properties) (Magnetic fields)

L 19161-63 EWT(1)/BDS AFFTC/ASD/ESD-3/SSD/IJP(C)
ACCESSION NR: AP3005328

S/0181/63/005/008/2213/2218

AUTHOR: Fiks, V. B.

60
59

TITLE: Transmission of an impurity-center pulse in a lattice by electron scattering

21

SOURCE: Fizika tverdogo tela, v. 5, no. 8, 1963, 2213-2218

TOPIC TAGS: impurity center, lattice, electron scattering, conduction electron, pulse, quasimomentum, free electron

ABSTRACT: The transmission of a pulse from scattered electrons to an impurity center determines the mechanism of ion drag by conduction electrons. It is shown that in a periodic lattice the pulse transmitted to an impurity center is determined by the change in quasimomentum of the scattered electrons and not to the change in its average pulse, as takes place for free electrons. The expression for the value of this pulse is $\hbar(k-k')$, where the terms represent standard values. "The author expresses his deep thanks to M. I. Kaganov, I. M. Lifshits, and V. M. Tsukernik for their discussions of the work." Orig. art. has: 35 formulas.

ASSN: Institute of Semiconductors, Academy of Sciences, SSSR

Card 1/2

ACCESSION NR: AP4004852 S/0181/63/005/012/3473/3479

AUTHOR: Fiks, V. B.

TITLE: Ion dragging by electrons, and thermal diffusion in metals

SOURCE: Fizika tverdogo tela, v. 5, no. 12, 1963, 3473-3479

TOPIC TAGS: thermal diffusion, thermodiffusion, ion dragging, ion dragging effect, thermal diffusion transfer, diffusion, diffusion coefficient, metal thermal diffusion, metal thermodiffusion, metal

ABSTRACT: The author has shown that ion dragging by electrons, conditioned by the transmission of an impulse from electrons to impurity centers, produces a supplementary contribution to the thermal-diffusion stream of impurity ions. This effect for multicharged impurity ions in good metallic conductors may be very substantial. The author begins with a consideration of thermal diffusion of impurity ions in a molten metal and applies the results to a solid metal. In the solid, the force acting on an impurity ion by virtue of lattice strain cannot be said to be equal to the pressure-volume gradient vector, however, as in a liquid. But, since the deciding contribution is the ion dragging by electrons, this circumstance is not

ACCESSION NR: AP4004852

essential in evaluating the effect. When an impurity is diffused through interstices, the heat of transfer, for the solvent, is zero. The activation energy for diffusion in solids is on the order of an electron volt, and the contribution of electrons will therefore become marked at high temperatures for impurities with low activation energies. It is noted that thermal-diffusion transfer must take place in a homogeneous metal free of impurities, since an activated ion is actually a lattice defect. The contribution of electrons in thermal diffusion takes place in semiconductors as well as in metals. Orig. art. has: 39 formulas.

ASSOCIATION: Institut poluprovodnikov AN SSSR, Leningrad (Institute of Semiconductors AN SSSR)

SUBMITTED: 28Jun63 DATE ACQ: 03Jan64 ENCL: 00

SUB CODE: PH NO REF SOV: 002 OTHER: 006

Card 2/2

IL'INSKIY, O.B.; FIKS, V.B.

Mechanism of the genesis of stimulation in solitary mechanoreceptors. Dokl. AN SSSR 152 no.1:218-220 S '63. (MIRA 16:9)

1. Predstavleno akademikom V.N.Chernigovskim.

(RECEPTORS (NEUROLOGY))

ACCESSION NR: AP4039639

S/0181/64/006/006/1589/1601

AUTHOR: Fiks, V. B.

TITLE: Electron drag on ions in a crystal lattice

SOURCE: Fizika tverdogo tela, v. 6, no. 6, 1964, 1589-1601

TOPIC TAGS: electron drag, crystal lattice, impulse transfer, ion scattering factor, wave vector, wave function, distribution function, Hamilton equation, Fermi surface, scattering cross section, isoenergetic surface, collision integral, relaxation time, vacancy, Maxwell distribution

ABSTRACT: The author studied the phenomenon of electron drag on ions in crystal lattices, considering the forces acting along the direction of the electrons on the fixed extrinsic centers of a normal ion lattice. The process of impulse transfer was considered for an ideal crystal in the absence of external field and the following general expression was derived for it

$$\Delta p = \sum_{s} \int |a_{sk_f}|^2 \sum_{s} C_{k_f}^{s} \Delta p_{k_f}^{s} d\tau_{k_f} =$$

$$= \hbar(k - \langle k_f \rangle) = \sum_{s} \int |a_{sk_f}|^2 \times$$

Card 1/5

$$\times \sum_{g} C^{g}_{kk_f} (\hbar k - \hbar k_f - 2\pi b_g) d\tau_{k_f},$$

where k_f is the reduced wave vector in the final state, $\langle k_f \rangle$ is its quantum mechanical average, a_{nk_f} the wave function, $C^{g}_{kk_f}$ the probability describing the scattering process, b_g is the base vector in the space of the lattice and

$$b_g = g_1 b_1 + g_2 b_2 + g_3 b_3,$$

where g_i is an integer (including zero). The following expression was derived for the resultant force

$$F_{ei} = \frac{1}{N_i (4\pi^3)^2} \int_{k} \int_{k_f} \sum_{g} \hbar (k_x - k_{xf} - 2\pi b_{gx}) W^{g}_{kk_f} f(k) \times$$

$$\times [1 - f(k_f)] d^3k d^3k_f.$$

where N_i is the number of extrinsic centers per unit volume, $W^{g}_{kk_f}$ the a priori probability per unit volume of transition from an occupied state to an unoccupied state, and $f(k)$ is the distribution function for electrons. These general expressions could be simplified if the mesh in k space were chosen so that the Fermi surface would lie wholly inside the mesh. Then, neglecting the transfer process, (transfer of electrons, after scattering, to the neighboring mesh), the

following expressions were obtained

$$W^{g}_{kk_f}=0 \text{ при } g \neq 0, \qquad F_{ei}=-\frac{1}{N_i 4\pi^3}\int \hbar k_x \hat{P}_i f d^3k,$$

where the collision integral has the form

$$\left(\frac{\partial f}{\partial t}\right)^{(i)}_{coll}=\hat{P}_i f=\int \left(f(k_f)[1-f(k)]\,W_{k_f k}-f(k)[1-f(k_f)]\,W_{kk_f}\right)\frac{d^3k_f}{4\pi^3}.$$

The collision integral was analysed under the following approximations:
1) Assuming that the isoenergetic surfaces are spheres, a linear approximation is made using a relaxation time for scattering. Then the following expressions are obtained

$$\boxed{f_1=-\frac{\partial f_0}{\partial \varepsilon}\frac{\partial \varepsilon}{\partial k_x}\frac{eF}{\hbar}\tau=-\frac{\partial f_0}{\partial k_x}\frac{eF}{\hbar}\tau,}$$

$$l_F=v_F\tau,$$

$$l_i=v_F\tau_i,$$

$$\boxed{F_{ei}=enl_F\rho_i F.}$$

Here τ is the relaxation time for electrons, including all types of scattering,

ACCESSION NR: AP4039639

τ_i the relaxation time for electron-ion scattering, n the electron density, l_f the total mean free path, v_f the velocity, l_i the mean free path for scattering by ions, and σ_i the scattering cross section. 2) The other approximation made was when the number of unoccupied states in the conduction zone was much less than the number of states occupied by electrons. Then the dependence of the electron energy on the quasi-impulse showed that the transport of vacancy states corresponded to the motion of positively charged quasi-particles or holes. For this case an expression is derived for F_{ei} under the quasi-classical assumption

$$F_{ei}=\frac{m^*}{N_i e\tau_i}j,$$

where m* is the effective mass of the electron and j the current density. For the case in which f_0 is a Maxwellian, F_{ei} and the ratio F_i/F, which represented the 'drag', are computed. The author expresses his deep appreciation of the discussions of this work with I. M. Lifshits, V. N. Gribov, and M. I. Kagan. Orig. art. has: 85 equations and 1 figure.

ASSOCIATION: Institut poluprovodnikov AN SSSR, Leningrad (Institute of Semiconductors, AN SSSR)

Card 4/5

ACCESSION NR: AP4039639

SUBMITTED: 18Oct63 ENCL: 00

SUB CODE: SS NO REF SOV: 007 OTHER: 001

Card 5/5

FIKS, V.B.

Entrainment of ions by electrons in the crystal lattice. Fiz. tver. tela 6 no.6:1589-1601 Je '64. (MIRA 17:9)

1. Institut poluprovodnikov AN SSSR, Leningrad.

AUTHOR: Kaganov, M. I.; Lifshits, I. M.; [illegible]

TITLE: On the scattering of an electron by an impurity center

SOURCE: Fizika tverdogo tela, v. 6, no. 9, 1964, 2723-2728

TOPIC TAGS: electron scattering, impurity center, momentum transfer, dispersion relation, electron collision

ABSTRACT: The manner whereby the momentum transfer to an impurity center by a scattered electron is governed by the concrete scattering mechanism is described for several limiting cases. 1. Quasi-[illegible] mechanism is described for several limiting cases. 1. Quasi-[illegible]al motion of an electron with arbitrary dispersion law in [illegible] of the impurity center; the problem then reduces to an [illegible] of the motion of the particle with a [illegible] disper- [illegible]

Card 1/3

AP4044945

ACCESSION NR: AP4043346 S/0181/64/006/008/2307/2313

AUTHOR: Fiks, V. B.

TITLE: Dynamic (effective) charge of the ions of a metal

SOURCE: Fizika tverdogo tela, v. 6, no. 8, 1964, 2307-2313

TOPIC TAGS: ion charge change, ion conductivity, atomic ion, atomic energy level, conduction band, crystal lattice, metal

ABSTRACT: The dynamic charge of the atoms of a single-component metal is defined here as the coefficient of proportionality between the force acting on the atom and the intensity of the external electric field. It is determined from the condition of mechanical equilibrium of the external field forces acting on the metal atoms, and the resultant force exerted on the lattice by the conduction electrons. It is calculated in the present article assuming the electrons to be completely free, and with allowance for the transfer of

ACCESSION NR: AP4043346

momentum from the scattered electrons to the lattice defects. Calculations are presented for two types of closed Fermi surfaces, electron and hole, with umklapp processes neglected. In the case of open Fermi surfaces, umklapp cannot be excluded even in neighboring cells, and the resultant expression shows that the dynamic charge can depend in such a case not only on the geometry of the surface but also on the scattering mechanism. It is pointed out in conclusion that the results do not apply to activated (diffusing) atoms in a metal, or to alloys where redistribution of electrons among the components can take place. "The author is grateful to M. I. Kaganov and I. M. Lifshits for very useful discussions." Orig. art. has: 1 figure and 31 formulas.

ASSOCIATION: Institut poluprovodnikov AN SSSR, Leningrad (Institute of Semiconductors, AN SSSR)

SUBMITTED: 12Feb64 ENCL: 00

SUB CODE: SS, NP NR REF SOV: 004 OTHER: 000

KAGANOV, M.I.; LIFSHITS, I.M.; FIKS, V.B.

Electron scattering by impurity centers. Fiz. tver. tela 6 no.9: 2723-2728 S '64. (MIRA 17:11)

1. Institut poluprovodnikov AN SSSR, Leningrad.

FIKS, V.B.

Ionic and mass transfer in magnetic fields. Fiz. met. i metalloved. 18 no.3:448-450 S '64. (MIRA 17:11)

1. Institut poluprovodnikov AN SSSR.

[illegible], B.P.; FIKS, V.B.

Isotope separation by the ionic mobility method. Zhur. fiz. khim. 38 no.6:1647-1651 Je '64. (MIRA 18:3)

1. Fiziko-tekhnicheskiy institut imeni Ioffe AN SSSR.

KONSTANTINOV, B.P.; FIK[illegible], [illegible]

Separation of isotopes by the method of [illegible]. Zhur.fiz. khim. 38 no.8:1904-1908 Ag '64. (MIRA 18:1)

1. Fiziko-tekhnicheskiy institut AN SSSR imeni A.F.Ioffe.

FIKS, V.B.

Separation of potassium and rubidium isotopes bases on their mobilities in KCl and RbCl solutions. Zhur. fiz. khim. 38 no.9:2257-2259 S '64. (MIRA 17:12)

1. Fiziko-tekhnicheskiy institut imeni Ioffe AN SSSR.

KONSTANTINOV, B.P.; FIKS, V.B.

Spearation of isotopes by the ion mobility method. Part 3.
Zhur. fiz. khim. 38 no.9:2255-2257 S '64. (MIRA 17:12)

1. Fiziko-tekhnicheskiy institut imeni Ioffe, AN SSSR.

FIKS, V.B.; STEPIN, Ye.V.

Measurements of equivalent diffusion coefficients in the separation of isotpes by the ion mobility method. Zhur. fiz. khim. 38 no.9:2260-2262 S '64. (MIRA 17:12)

1. Fiziko-tekhnicheskiy institut imeni Ioffe AN SSSR.

BAKULIN, Ye.A.; TROSHIN, V.P.; FIKS, V.B.

Temperature dependence of the relative difference in mobilities of isotopic lithium ions. Zhur. fiz. khim. 38 no.9:2262-2263 S '64. (MIRA 17:12)

1. Fiziko-tekhnicheskiy institut imeni Ioffe AN SSSR.

FIKS, V.B.

Electrophoresis of dielectric particles in liquid metals and semiconductors. Fiz.met. i metalloved. 18 no.5:788-790 N '64.
(MIRA 18:4)

1. Institut poluprovodnikov AN SSSR.

IL'INSKIY, O.B.; FIKS, V.B.; KHRAPKOVA, S.I.

Effect of temperature on the bioelectric activity of Pacinian bodies. Dokl. AN SSSR 164 no.1:227-229 S '65.

(MIRA 18:9)

1. Institut fiziologii im. I.P. Pavlova AN SSSR. Submitted July 23, 1964.

FIKS, V. L.

PA 171T50

USSR/Electricity - Relays Nov 50
Contacts

"Studying the Burning of Relay Contacts," V. L. Fiks, Engr, Moscow Power Eng Inst imeni Molotov

"Elektrichestvo" No 11, pp 71-74

Describes studies using high-speed film by means of so-called "time loop" device. High-speed filming permitted establishing principles of contact burning and tracing process of contact opening and closing of 0.073 sec duration, and separate stages of this process lasting 0.005 sec. Submitted 8 Apr 50.

[redacted] 171T50

FIKS, V. L.

USSR/Electricity - Machines, Electric Windings — Jul 51

"Displacement of Current in Slots of Trapezoidal Form," V. L. Fiks, Engr, Moscow

"Elektrichestvo" No 7, pp 58-61

Gives an analytical method for calcg losses in a winding due to displacement of current for a trapezoidal slot. A Bessel function used in the soln permits accurate consideration for the characteristics of the slot form. Submitted 23 Dec 50.

199T24

8(2) PHASE I BOOK EXPLOITATION SOV/1855

Soveshchaniye po elektricheskim kontaktam. Moscow. 1956.

Elektricheskiye kontakty; trudy soveshchaniya (Electrical Contacts; Transactions of the Conference) Moscow, Gosenergoizdat, 1958. 303 p. 4,150 copies printed.

Editorial board: B.S. Sotskov (Resp. Ed.), V.V. Usov, N.S. Kuznetsov, I.Ye. Dekabrun, and Z.S. Kirillova; Ed.: I.Ye. Dekabrun; Tech. Ed.: K.P. Voronin.

PURPOSE: This collection of articles is intended for engineers and technicians designing, developing and operating electrical apparatus and is concerned with electric contact materials. It may also be useful in scientific research institutes and laboratories.

COVERAGE: This book comprises reports delivered at the Electric Contacts Conference held in Moscow in November, 1956. These papers cover physical processes occurring during connecting or disconnecting, methods of designing and testing electric contacts, production and characteristics of contact materials. During this conference of the Institut avtomatiki telemekhaniki AN SSSR (Institute of Automation and Telemechanics, Academy of Sciences, USSR) participants approved periodic conferences of physicists, metallurgists, chemists and apparatus design specialists to discuss problems of electric contacts, which are the components of electric apparatus primarily influencing the reliability of electric systems, especially d-c control systems. Their physical, thermal, mechanical and chemical processes have still not been well analyzed. References are given at the end of most of the reports.

II. DESIGN : APPLICATION AND TESTING METHODS

Feyler, G.O. (Zavod "Dinamo," Moscow - Moscow "Dinamo" Plant) Wear Resistance of Contacts in D-c Contactors and Controllers 138
The author describes the method of testing wear resistance of contacts at the "Dinamo" Plant in Moscow and proposes that all other plants adopt this method as a standard one to enable the comparison of test results.

Gordon, A.V. Methods of Testing the Resistance to Wear of Electric Contacts in Aircraft D-c Contactors 148
The author reports the results of work he carried out along with engineers K.V. Isayev, M.A. Prusov, V.P. Simonova. He describes the method applied for testing aircraft D-c contacts. This method permits approximating testing conditions with real operating conditions. He suggests applying this method for testing contactors of general industrial use.

Pika, V.I., and M.A. Gurevich. (Zavod "ATE-1 "-Moscow "ATE-I Plant) Contacts of Vibrator Voltage Regulators 156
The authors summarize the results of investigations they carried out in the Electric Machine Laboratory of the "ATE-I" Plant along with Engineers Ye.K. Shvedov, V.I. Khrunin, Ya.M. Levit, L.B. Bayer, R.V. Gorelov, O.G. Semibova on operating conditions of contacts in vibrator voltage regulators of automobile generators, on the design of contact fittings and on various pairs of contact metals.

III. PRODUCTION AND CHARACTERISTICS OF CONTACT MATERIALS 171

Al'tman, A.B., I.P. Melashenko, and E.S. Bystrova (Nauchno-issledovatel'skiy institut elektrotekhnicheskoy promyshlennosti - Scientific-Research Institute for the Electrical Industry) Modern Sintered-Metal Electric Contacts. 171
Sintered metals are presently the most suitable materials for arcing tips of high-duty circuit-breakers. The authors explain the technical requirements, describe the structure of the compositions, methods of production, characteristics and applications.

Frantsevich, I.N., and O.K. Teodorovich. (Institut Metallokeramiki i Spetsial'nykh Splavov AN UkSSR - Institute for Sintered Metals and Special Alloys, UkrSSR Academy of Sciences) Production Methods of Sintered-Metal Electric Contacts 186
The authors describe the results of their investigation of the comparison of various methods of producing sintered metals.

Usov, V.V. and Murav'yeva, Ye.M. (Nauchno-issledovatel'skiy institut elektrotekhnicheskoy promyshlennosti - Scientific-Research Institute for the Electrical Industry) Thermochemical Method for Production of Contact Compositions. 199
Unication of alloys at higher temperatures results in structure similar to that obtained by the sintered metal power method. The authors explain this thermochemical method and its advantages.

Al'tman, A.B., and E.D. Bystrova. (Scientific-research Institute for the Electrical Industry) Internal Structure of Wear-resistant Electric Contacts 214
The authors discuss their investigation of the influence of internal structure of heterogeneous materials on wear resistance. They paid special attention to the alloys Ag-Cu, Ag-Si-Mg, and Ag-Al.

Card 8/11

FIKS, Ya.A.

Signal distortions stipulated by the multibeam nature of the scatter mechanism in the ionosphere. Elektrosviaz' 18 no.10:7-16 O '64. (MIRA 17:12)

FIKS-MARGOLIN, G.B., inzh.

Increasing the production output by alternating the order of machining. Mashinostroitel' no.9:24-25 S '58. (MIRA 11:10)
(Machine-shop practice)

EWT(d)/EWT(1)/EWG(v)/FCC/EEC-4/EEC

Ya. A.

Signal distortion due to multipath scatter in the ionosphere

SOURCE: Elektrosvyaz', no. 10, 1964, 7-16

TOPIC TAGS: ionospheric scatter, signal distortion, scatter propagation

The spectral and time distortions of an E-layer s ...propagated ... the multipath nature of propagation ...

...re of signal distortion. Formulas for the ...

Card 1/2

AP4048443

... and tables.

ASSOCIATION: none

... 1 Dec63

NO REF SOV

FIKS-MARGOLIN, G.B.

Device for determining the deformation of lathes. Izv.vys.ucheb.zav.; prib. 3 no.4:53-58 '60. (MIRA 13:9)

1. Sredneaziatskiy politekhnicheskiy institut. Rekom. kafedroy tekhnologii mashinostroyeniya.
(Lathes--Testing)

FIKSEL', G.K., inzh.; KUROCHKA, A.L., inzh.; BABIN, A.S., inzh.

Some practical aspects of operating VL23 series electric locomotives. Elek. i tepl. tiaga 3 no.2:33-37 F '59. (MIRA 12:4)

(Electric locomotives)

121-8-10/22

AUTHOR FIKSHIS, M.M.

TITLE Electric Slag Welding by means of Magnetic Step-by-Step Apparatuses.
(Elektroshlakovaya svarka magnitno-shagayushchimi apparatami.- Russian)

PERIODICAL Stanki i Instrument 1957, Vol 28, Nr 8, pp 29-32 (USSR)

ABSTRACT This process which is especially suitable for the welding of heavy plates was worked out by the Institute for Electric Welding of the Academy of Science of the USSR and was introduced to the most important works of the country. The essential part of this process consists in the fact that welding is carried out by means of two magnetic step-by-step apparatus mod. A-501 which move on both sides of the part of construction to be welded at the same time. The usual apparatus A-501 is illustrated and explained. The operation speed (welding speed)is regulated within the limits of from 1-9 m/hr. The supply of the electrode wire is arranged by a special mechanism like that of a pipe. During the welding process the electrode apparatus must be regulated by means of a mechanism. Welding generators serve as current supply. Welding is carried out by means of d.c. current of reverse polarity. An

CARD 1/2

121-8-10/22

Electric Slag Welding by means of Magnetic Step-by-Step Apparatuses.

illustration shows a general view of the apparatus. Four different kinds of welding of T-shaped and angular connections can be carried out by means of magnetic step-by-step apparatuses, as is shown by illustrations and is also described and explained later. In order to avoid a tilting of the apparatus on the occasion of its disconnection it is hung up as is shown an illustration. The adjustment of the apparatus is described in detail and illustrated. The electric slag process flows steadily with a voltage of from 28-38 V; the operation voltage desired is 32-34 V. With such apparatuses plates of a thickness of from 40-100 mm can be welded together. The advantages of this welding method are: high quality of welding seam, density of metal, the lack of slag inclusions and a welding capacity which is from 2-2,5 times greater than that of handwork. The light weight of the apparatus (25 kg) and its small size (250 x 300 x 420 mm) makes it easy to handle and renders welding at places which are not easily accessable possible. (9 references)

ASSOCIATION: not given.
PRESENTED BY: -
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AVAILABLE: Library of Congress.
CARD 2/2

FIKSEN, N. V.

AUTHOR: Fiksen, N. V., Engineer. 129-11-7/7

TITLE: Experience Gained in Improving the Technological Processes of Heat Treatment of Large Forgings. (Opyt sovershenstvovaniya tekhnologicheskikh protsessov termicheskoy obrabotki krupnykh pokovok).

PERIODICAL: Metallovedeniye i Obrabotka Metallov, 1957, No.11, pp. 77-80 (USSR)

ABSTRACT: The author reviews the experience of the Novo-Kramatorsk Engineering Works imeni I. V. Stalin (Novo-Kramatorskiy Mashinostroitel'nyy Zavod imeni I. V. Stalina)in the field of heat treatment of large forgings for rolling stands for very large presses, hydraulic turbines etc. High speed methods of deep and surface heat treatment are being used for components of cross sectional dimensions of up to 1000 mm. The following are described: the heat treatment of hot rolling rolls made of steel 55X, 60XΓ and 50Γ; the heat treatment by recharging from one furnace into another (by means of which the duration of the heat treatment cycles can be reduced by 20 to 40%); the heat treatment of components by means of 50 c.p.s. and high frequency currents (by means of which the cycle duration can be reduced up to 25 fold and the hardening depth can be

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129-11-7/7

Experience Gained in Improving the Technological Processes of Heat Treatment of Large Forgings.

increased by over 50%) and isothermal annealing of alloy steel forgings. Modernization is scheduled of the large heat treatment furnaces which will be fitted with up-to-date apparatus and instruments and it is anticipated that thereby an increase in output by 30% and a decrease in fuel consumption by 10% will be achieved. The graph, Fig.3, shows a new heat treatment regime developed in co-operation with Professor M. P. Braun for rolls up to 1000 mm dia. which lasts for 160 hours and combines the annealing, normalization and subsequent high temperature tempering. There are 7 figures.

ASSOCIATION: Novo-Kramatorsk Engineering Works. (Novo-Kramatorskiy Mashinostroitel'nyy Zavod imeni I. V. Stalina).

AVAILABLE: Library of Congress

Card 2/2

KON, N.I.; MAKSIMENKO, G.A.; NOVIKOV, P.G.; FIKSEN, N.V.; FROLOVA, M.V.

Investigating the cast metal of steel anvil blocks. Lit. proizv. no.1:44-46 Ja '59. (MIRA 12:1)
(Steel castings)

18(5,7) SOV/128-59-9-3/25

AUTHOR: Vasilevskiy, P.F., and Novikov, P.G., Candidates of Technical Sciences, and Fiksen N.V., Engineer

TITLE: Fundamental Trends of Development in the Technology of Heavy Castings Moulding

PERIODICAL: Liteynoye proizvodstvo, 1959, Nr 9, pp 5-13 (USSR)

ABSTRACT: Over the last 25 years, Soviet industry attained a comparatively high level in the manufacturing of heavy castings, that is of those weighing over 5 tons. The main works making them are: Novo-Kramatorskiy, ... Ural'skiy, Yuzhno-Ural'skiy, Elektrostal'skiy, Sibirskiy and Nevskiy Machine-Building Plants. However, the volume of heavy castings produced at present does not satisfy the actual needs presented by the continuous development of Soviet industry; hence the importance of stepping-up their production by introducing, first of all, modern methods in the preparing of large-size mouldings. Such large-size parts of different machines and installations, as water turbine stators, high-pressure cylinders for steam turbines, architraves for hydraulic presses, water turbine working wheels, frames

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SOV/128-59-9-3/25

Fundamental Trends of Development in the Technology of Heavy Castings Moulding

for train blooms, etc., are at present piecemeal cast; their components are then joined together by bolting, welding, or by other means. The author of this article maintains that development of large-size moulds manufacture should come to the forefront. As further means of development of foundry production, the following measures are recommended: 1) Widening of application of cast-welded constructions; 2) application of universal assembling caissons; 3) application of large universal assembling casting moulds and models; 4) control over cooling processes of moulds at different stages of casting; 5) widening of application of machine-moulding methods for heavy castings. The use of compulsory cooling of casting moulds was for the first time realized in 1955, in the Minsk Plant imeni Voroshilov, applying a method proposed by Mitichev. There are 1 graph, 1 table, 13 diagrams, 15 photographs and 8 references, 6 of which are Soviet, 1 English and 1 German.

Card 2/2

BIDULYA, P.N., prof., doktor tekhn.nauk; NOVIKOV, P.G., kand.tekhn.nauk; Frolova, M.V., inzh.; MANAKIN, A.M., kand.tekhn.nauk; FIKSEN, N.V., inzh.

Investigating the metal quality of large steel castings. [Trudy] TSNIITMASH 97:74-104 '60. (MIRA 13:8)
(Steel castings--Testing)
(Foundries--Quality control)

BRAUN, Mikhail Petrovich; VINOKUR, Bertol'd Bentsionovich; MIROVSKIY, Eduard Ippolitovich; GELLER, Aleksandr L'vovich; MAR'YUSHKIN, Lev Grigor'yevich; FIKSEN, N.V., inzh., retsenzent; FURER, P.Ya., red.; GORNOSTAYPOL'SKAYA, M.S., tekhn. red.

[Plastic deformation and heat treatment of large steel alloy parts] Plasticheskaia deformatsiia i teplovaia obrabotka krupnykh izdelii iz legirovannykh stalei. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1961. 216 p. (MIRA 14:7)

(Steel forgings) (Deformations (Mechanics))